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the Association, reviews of related literature, etc.

The first volume consists of the following original and reprinted papers:

'Peter Henry Ling, the Swedish Gymnasiarch,' by E. M. Hartwell; 'The Olympic Games and Their Influence upon Physical Education,' by Ellery G. Clark; 'Statistical Sketch of the Present Status of Physical Training,' by Karl Zapp; 'What the City of Braunschweig, Germany, Does for the Physical Training of her Children,' by Ernst Hermann; 'Report of Committee of the Boston Physical Education Society, to Suggest a Substitute for the Manual of Arms as a Means of Physical Exercise in the Military Training of School-boys,' 'Military Drill in the Public Schools,' by D. A. Sargent; 'Manual Training: Its Educational Value,' by Thomas M. Balliet; 'The Influence of Exercise upon Growth,' by Henry G. Beyer; Brookline Public Bath; Reports from Societies; Editorial Notes and Comment; Book Notices and Bibliography; 'Index to the Ten Reports of the A. A. A. P. E.,' by J. M. Pierce.

One of the most important contributions to this number is the Index to the ten reports of the A. A. A. P. E. prepared by Mr. John M. Pierce. The National Council have decided to strike this off as a reprint for the benefit of those who desire to bind it with the reports. The report of the Committee on Military Training has also been reprinted and should do good educational service in combating the misguided efforts in different parts of the country to foist military drill on the public schools in place of a rational system of sports, games and physical exercises. Copies of both these reprints may be obtained by application to the Corresponding Secretary, Dr. G. W. Fitz, Cambridge, Mass.

The Council of the A. A. A. P. E. are to be commended for their boldness in undertaking this publication, and to be congratulated on its creditable appearance. Teachers in general will feel indebted to them for making accessible valuable papers on physical education, especially since the low price of membership, one dollar per year, brings the *Review* easily within their reach.

G. W. F.

HARVARD UNIVERSITY.

SOCIETIES AND ACADEMIES.

SCIENTIFIC ASSOCIATION OF THE JOHNS HOPKINS UNIVERSITY.

THE one hundred and thirty-second regular meeting was held March 18, 1897, President Remsen in the chair.

The papers presented and read were:

1. 'The Projection of Panoramic Views of Contoured Surfaces,' by Josiah Pierce, Jr.

The principal subjects brought up for discussion were: 1. The metrical and projective properties of contours and bas-reliefs. 2. The principles involved in the projection of irregular plane-figures and surfaces. 3. The practical applications of the laws of projection in the design of perspectographs and mechanical aids to projection.

It was demonstrated in the paper that the general problem of the projection of an irregular surface of any form could be reduced to one of great simplicity by the methods suggested by the author of projecting successive contours or equidistant sections of the surface. The methods were shown to be applicable to the illustration of complex geological problems, which under ordinary conditions would require to be illustrated upon models, and for the solution of many difficult problems in projection, such as the determination of shadows on irregular surfaces and the development of bas-reliefs and projective forms.

Illustrations were given of a number of practical applications of the methods by drawings of very irregular surfaces developed in relief by the projection of contours—such as panoramic views of wide areas, and surfaces developed in high or low relief under different conditions of projection from horizontal vertical and inclined sections.

In the discussion given of the general problem of the projection of irregular plane figures two methods of operation were presented—one involving the metrical and projective relations of corresponding points of plain figures in perspective, applicable in the design of perspectographs and linkages; the other the relations of corresponding lines in perspective—applicable in the methods of tracing the projections of irregular figures—enclosed in nets of intersecting lines.

It was shown to be possible to perform any operation of plane perspective with a sliding linkage of three rods and by a slight modification of the pantagraph to obtain any desired orthogonal or parallel projection of an irregular figure or surface.

The author also called attention to the extreme simplicity of the methods of projecting extensive panoramic views from contoured maps by the employment of a linkage of two threads, the methods being fully illustrated by the drawings and models accompanying the paper.

2. 'The Nerve Impulse in its Relations to the Strength of the External Stimulus,' by C. W. Greene.

The papers presented and read by title were:

1. 'A New Form of Mirror for Reflecting Telescopes,' by Chas. Lane Poor.

The mirror is a portion of a paraboloid of revolution, cut at the extremity of the parameter. The advantages over the old form were indicated as follows: Utilization of the full aperture; the reflected beam being at right angles to the incident light; no second mirror necessary; possibility of constructing mirrors of great focal length; possibility of such mirrors of short focal length, replacing photographic doubts.

2. 'A New Form of Equatorial Mounting for Reflecting Telescopes.'

With mirror of the above form an equatorial mounting becomes very simple; the declination axis becomes the telescope tube, the mirror being mounted at extremity of such axis and capable of revolving about it in a manner similar to the large flat of the equatorial condé.

The image is formed at the intersection of the polar and declination axes and is always in the same position; the observer, therefore, remains at rest while viewing any and every part of the visible heavens. A single reflecting surface replaces three in the reflecting equatorial condé, and four in the forms mentioned by Wardsworth. No dome is required. Many other advantages were indicated and several modifications of the general form pointed out.

Note. — Experiments with mirrors of the

above form are now being carried out at the University.

CHAS. LANE POOR,
Secretary.

BIOLOGICAL SOCIETY OF WASHINGTON, 274TH
MEETING, SATURDAY, MARCH 27TH.

Mr. M. B. WAITE spoke on 'Factors Governing Pear Blight,' showing that the very conditions which were favorable to the growth of the tree were also favorable to the development of the disease, and that an important factor in combating the blight was the prevalence of a considerable degree of drouth.

Mr. Theo. Holm gave a historical review of our knowledge of 'The Grass Embryo and its Constituents.' He described the embryo as defined by Malpighi and authors of recent date, saying that there seemed to be good reason for adopting the explanation of its structure given by Malpighi more than 200 years ago. This involves the definition of both the 'scutellum' and the 'lobule' as independent leaves, while the 'pileole' thus becomes the first sheathing leaf or the second leaf proper after the cotyledon. A full account will soon appear in an article upon Fuirena, by the speaker, in the *American Journal of Science*.

Dr. E. A. De Schweinitz described 'Some Methods of Generating Formaldehyde and its use as a Disinfectant,' showing a specially devised form of lamp with a platinized wick by which large volumes of the gas could be readily generated.

F. A. LUCAS,
Secretary.

NEW BOOKS.

The Materials of Construction. J. B. JOHNSON. New York, John Wiley & Sons. 1897. Pp. xv + 787. \$6.00.

The Principles of Mathematical Chemistry. GEO. HELM. Authorized translation from the German by J. LIVINGSTON R. MORGAN. New York, John Wiley & Sons. 1897. Pp. viii + 228. \$1.50.

An Outline of the Theory of Solution. J. LIVINGSTON R. MORGAN. New York.

Plane and Solid Analytical Geometry. FREDERICK H. BAILEY, FREDERICK S. WOODS. Boston and London, Ginn & Co. 1897. Pp. xii + 371.